## REMARKS

Claims 1-24 are currently pending in the above-identified patent application.

In the subject Office Action, claims 1-24 were rejected under 35 U.S.C. 103(a) as being unpatentable over Ofek (U.S. Patent No. 6,549,921) and Kamvysselis et al. (U.S. Patent No. 6,640,280) since the Examiner stated that as per claim 1, Ofek discloses a method for recovering data in a redundant data storage system having a plurality of data storage units [Fig. 1; Col. 14, lines 38-46], said method comprising: storing said data on said plurality of data storage units according to a redundant data storage method [Col. 14, lines 38-46]; removing one of said plurality of data storage units for a period [Col. 14, lines 48-49]; starting a delta log concurrent with said step of removing one of said plurality of data storage units [Col. 14, lines 50-67]; changing a portion of said data on the remainder of said plurality of data storage units during the period when one of said plurality of data storage units is removed in accordance with the redundant data storage method [Col. 14, lines 59-64]; storing a record of said changes in said delta log during the when one of said plurality of data storage units is removed [Col. 14, lines 59-64]; replacing said one of said plurality of data storage units [Col. 14, lines 59-64]; and updating said one of said plurality of data storage units [Col. 14, lines 59-64].

The Examiner continued that Ofek does not explicitly disclose the delta log is separate from said plurality of data storage units, but that Kamvysselis et al. discloses the delta log is separate from said plurality of data storage units [Col. 1, lines 50-57]. The Examiner then concluded that it would have been obvious to one of ordinary skill in the art at the time of invention by applicants to modify the system of Ofek to include the delta log being separate from said plurality of data storage units so that if a disaster occurs that renders the first storage device inoperable, a host may resume operation using the data of the second storage device (Col. 1, lines 40-46).

As per claim 9, the Examiner asserted that Ofek discloses a redundant data storage system capable of fast restoration of serviced data storage units

[Fig. 1] comprising: a plurality of data storage units [Fig. 1; Storage devices 15, 16, 42, 43], a delta log [Col. 14, lines 50-67]; and a controller that stores data on said plurality of data storage units according to a redundant data storage method [Fig. 1; controllers 31, 34], changes a portion of said data after taking one of said plurality of said data storage units off line [Col. 18, lines 1-7], stores a record of the changes in a delta log that are made to the remainder of the plurality of said data storage units [Col. 18, lines 5-7], brings said one of said plurality of said data storage units online, and updates said one of said plurality of said data storage units by updating those portion of data recorded in said delta file [Col. 18, 13-19].

The Examiner stated further that Ofek does not explicitly disclose that the delta log is separate from said plurality of data storage units, but that Kamvysselis et al. discloses the delta log is separate from said plurality of data storage units [Col. 1, lines 50-57]. The Examiner then concluded that it would have been obvious to one of ordinary skill in the art at the time of invention by applicants to modify the system of Ofek to include the delta log being separate from said plurality of data storage units so that if a disaster occurs that renders the first storage device inoperable, a host may resume operation using the data of the second storage device (Col. 1, lines 40-46).

As per claim 17, the Examiner stated that Ofek discloses a redundant data storage system capable of fast restoration of serviced data storage units [Fig.1] comprising: a first means for storing data [Fig. 1; Storage devices 15, 16, 42, 43]; and a second means that stores data on said first means according to a redundant data storage method [Fig. 1; Controllers 31, 34], changes a portion of said data after taking one of said first means off line for a period [Col. 18, lines 1-7], stores a record of the changes in a third means that are made to the remainder of the plurality of said data storage units [Col. 18, lines 5-7], brings said one of said first means online, and updates said one of said first means by updating those portions of data recorded in said third means [Col. 18, 13-19].

The Examiner stated further that Ofek does not explicitly disclose a third means separate from said first means, but that Kamvysselis et al. discloses a

third means separate from said first means [Col. 1, lines 50-57]. The Examiner then concluded that it would have been obvious to one of ordinary skill in the art at the time of invention by applicants to modify the system of Ofek to include a third means separate from said first means so that if a disaster occurs that renders the first storage device inoperable, a host may resume operation using the date of the second storage device (Col. 1, lines 40-46).

If an independent claim is nonobvious under 35 U.S.C. 103, then any claim depending therefrom is nonobvious. *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988). Dependent claims 2-8, 10-16, and 18-24 were rejected under 35 U.S.C. 103(a) as being unpatentable over Ofek (U.S. Patent No. 6,549,921) and Kamvysselis et al. (U.S. Patent No. 6,640,280). However, since applicants respectfully believe that independent claims 1, 9 and 17 are patentable over Ofek and Kamvysselis et al., applicants believe that dependent claims 2-8, 10-16 and 18-24 are likewise patentable and that no further response is required in their regard.

Applicants respectfully disagree with the Examiner concerning the rejection of claims 1-24 under 35 U.S.C. 103(a) as being unpatentable over Ofek and Kamvysselis et al. for the following reasons.

Column 18, lines 1-7, of Ofek state: "... means for isolating the second data storage facility from the first data storage facility whereby normal operations between the first data storage facility and the data processing system continue, means for recording changes to the data in the first data disk storage facility **during the second operating mode**, ... ." (Emphasis added by applicants.).

Turning now to Col. 14, lines 38-64, of Ofek, applicants respectfully wish to point out that **during the second operating mode**, while the second data storage facility is isolated from the first data storage facility, **changes made during this operating mode are recorded to the data in the first data storage facility** (**IN ITS NORMAL OPERATING MODE**), and data is transferred from the isolated second data storage facility to the medium in the backup facility simultaneously with and independently of the operation of the data processing system with the first data storage facility. Subsequent to this step (after

completion of the data transfer and independently of the data processing system), the data in the second data storage facility is updated by transferring data for which changes have been recorded during the second operating mode from the first data storage facility. Therefore, applicants believe that the backup medium of Ofek is not used as a "delta log" for recording data incoming to the data processing system while the second data storage facility has been isolated therefrom. Rather, the backup facility is used to backup the second data storage facility. Nor is a "delta log" started at all since it is stated that the first data storage facility continues its normal operations.

Moreover, claim 10 of Ofek teaches that data are stored in data blocks in the first and second data storage facilities such that during the backup operating mode, changes made to blocks of the first data storage facility are identified, and the data in each changed block is transferred to the second data storage facility. Thus, no "delta log" is started when the second data storage facility is isolated.

Ofek in Col 7, lines 17-24 states: "Unlike the prior art operation of the local and remote systems like those shown in Fig. 1, a system constructed in accordance with this invention enables the remote system **11** (1) to disconnect from the local system **10**, (2) to enable all the data to transfer to a conventional backup unit **53**, such as a conventional tape backup unit, (3) to reconnect to the local system **10** and (4) to resynchronize to the local system **10** and remote system **11** automatically." (Emphasis added by applicants). Applicants submit that transferring **all** the data to a conventional backup unit is the antithesis of a delta log.

The Examiner has cited Kamvysselis et al. Col. 1, lines 40-46 and lines 50-57, as disclosing a delta log separate from said plurality of data storage units. Col. 1 lines 40-57 state: "In some instances, it may be desirable to copy data from on e storage device to another. For example, **if a host writes data to a first storage device, it may be desirable to copy that data to a second storage device provided in a different location** so that if a disaster occurs that renders the first storage device inoperable, the host (or another host) may resume operation using the data of the second storage device. ... Other

incarnations of RDF may provide a peer to peer relationship between the local and remote storage devices, but **any data changes made to the local storage device are automatically provided to a remote storage device** using RDF. The local and remote storage devices may be connected by a data link, such as an ESCON link. The RDF functionality may be facilitated with an RDF adapter (RA) provided at each of the storage devices." (Emphasis added by applicants.). Further, Col. 5, lines 16-24 state: "Data from the local storage device **24** is copied to the remote storage device **26** via an RDF link **29** to cause the data on the remote storage device **26** identical to the data on the local storage device **24**. Note that there may be a time delay between the transfer of data from the local storage device **24** to the remote storage device **26** so that the remote storage device may, at certain points in time, contain data that is not identical to the data on the local storage on the local storage device **24**." Applicants submit that Kamvysselis et al. merely teaches a remote backup device, not a delta log. Moreover, the remote storage device of Kamvysselis et al. is the device to which data is copied from the local storage device which is exactly contrary to the function of the delta log of the present invention which updates one of the plurality of data storage units with those portions of data recorded in the delta log. (See recited portions of subject claim 1 hereinbelow.). Therefore, the combination of Ofek which does not teach a delta log, with Kamvysselis et al., which does not teach a remote delta log, does not meet the limitations of subject claims 1, 9 and 17.

As stated on page 4, beginning on line 22, and ending on page 5, line 3, of the subject Specification: "When one of the data storage units **104** or **106** becomes unavailable, a delta log may be kept. The delta log **108** may keep track of any changes made to the data during temporary outage of one of the data storage units **104** or **106**. When the data storage unit becomes available again, only the changed data as recorded in the delta log **108**, may need to be updated in the restarted data storage unit." (Emphasis added by applicants.). Thus, the delta log of the present invention keeps track of changes made to the data during an outage of one of the data storage units.

Subject claim 1 recites in part: "...removing one of said plurality of data storage units for a period; starting a delta log separate from said plurality of data storage units concurrent with said step of removing one of said plurality of data storage units; changing a portion of said data on the remainder of said plurality of data storage units during the period when one of said plurality of data storage units is removed in accordance with the redundant data storage method; storing a record of said changes in said delta log during the period when one of said plurality of data storage units is removed; replacing said one of said plurality of data storage units; and updating said one of said plurality of data storage units by updating those portions of data recorded in said delta log." (Emphasis added by applicants.). Claim 1 clearly recites the use of a delta log separate from the plurality of data storage units for storing a record of changes on the remainder of the plurality of data storage units during the period when one of the data storage units is removed, and **updating the removed data storage unit with those portions recorded on the delta log when the data storage unit is restored to operation**.

In order to establish *prima facie* obviousness of a claimed invention, all the claim limitations must be taught or suggested by the prior art. *In re Royka*, 490 F.2d 981, 180 USPQ 580 (CCPA 1974). "All words in a claim must be considered in judging the patentability of that claim against the prior art." *In re Wilson*, 424 F.2d 1382, 1385, 165 USPQ 494, 496 (CCPA 1970). Since applicants respectfully believe that Ofek does not teach a delta log and that Kamvysselis et al. merely teaches a remote storage unit to which data is transferred from the local data storage units, rather than the opposite direction of data transfer of a delta log, applicants believe that the Examiner has not made a proper *prima facie* case for obviousness as is required under 35 U.S.C. 103.

Independent claims 9 and 17 also recite the use of a delta log ("third means" in claim 17) separate from the plurality of data storage units which functions as a delta log and not simply as a remote, redundant data backup for the local data storage units. Applicants therefore respectfully believe that these claims are patentable over Ofek in combination with Kamvysselis et al. for similar

reasons to the arguments given for claim 1, hereinabove. Applicants further submit that neither Ofek nor Kamvysselis et al. teaches the use of a delta log.

In view of the discussion presented hereinabove, applicants believe that subject claims 1-24 are in condition for allowance or appeal, the former action by the Examiner at an early date being earnestly solicited.

Reexamination and reconsideration are respectfully requested.

Respectfully submitted,

COCHRAN FREUND & YOUNG LLC

Date: May 5, 2009

By: _____

Samuel M. Freund
Attorney for Applicants
Reg. No. 30,459
2026 Caribou Drive, Suite 201
Fort Collins, Colorado 80525
Phone: (970) 492-1100
Fax: (970) 492-1101
Customer Number: 27479